EPIDEMIOLOGY & DISEASE CONTROL

Vector-Borne and Zoonotic Disease Newsletter

2002 Highlights

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RABIES IN YEAR 2002

In year 2002, the Arizona State Health Laboratories (ASHL) in Phoenix and Tucson tested 2,735 animals for rabies virus. Of these, 1,630 were domestic animals and 1,105 were wild animals. Submissions represented over 34 species of animals. One-hundred and forty-three (143) animals tested positive for rabies in 2002 (see Table). This is the highest number of animal rabies cases ever reported in Arizona and represents a 11% increase compared to the previous year when 129 animals were reported. In 2002, rabies was confirmed in 56 bats, 44 skunks, 33 foxes, three bobcats, three llamas, two coyotes, one dog and one javelina. Rabid animals were reported in 12 counties. A total of 130 persons were given rabies post-exposure prophylaxis (PEP) after having been exposed to laboratory confirmed rabid animals in 2002.

Skunks: Of the 376 skunks submitted for testing in 2002, 44 (12%) tested positive for rabies. Counties reporting rabid skunks include Cochise (11), Pima (6) and Santa Cruz (27). There were two human exposures to rabid skunks reported in 2002. Also exposed were 33 pet dogs, one cat and one cow. Sixteen rabid skunks were associated with an extensive epizootic affecting communities along the Santa Cruz River of Santa Cruz and Pima counties. An epizootic was also evident in the Patagonia area of Santa Cruz County (8 rabid skunks reported). Eleven rabid skunks were reported in the western portions of Cochise County from Benson south to the Mexico border. Skunk rabies is enzootic in southern Arizona and is associated with the South Central skunk virus variant.

Bats: Of the 505 bats submitted for testing, 56 (11%) were rabies positive. At least nine different species of bats tested positive for rabies in 2002, including 12 Mexican freetails (*Tadarida brasiliensis*), 12 big browns (*Eptesicus fuscus*), 11 western pipistrelles (*Pipistrellus hesperus*), five *Myotis sp.*, four hoary bats (*Lasiurus cinereus*), two big-freetail bats (*Nyctinomops macrotis*), two yellow bats (*Lasiurus xanthinus*), one pallid bat (*Antrozous pallidus*), one lesser long-nose bat (*Leptonycteris curasoae*) and six undetermined. Rabid bats were reported from April to December in ten counties. Seven persons received PEP in year 2002 for exposures (bites and/or direct contact) to laboratory confirmed rabid bats.

Foxes: There was a dramatic increase in fox rabies in 2002 compared to the previous year when six foxes were reported. Of the 84 foxes submitted for testing, 33 (39%) tested positive for rabies. Rabid foxes were reported in Cochise (5), Coconino (4), Gila (6), Pima (3), Pinal (3), Santa Cruz (3) and Yavapai (9) counties. There were five human exposures to rabid foxes in 2002. Although many of the rabid foxes were reported as isolated cases, multiple cases were reported in the Sedona/Oak Creek (7), Chiricahua Mountains (3), Camp Verde (2), Nogales (2), Rimrock (2), San Manuel/Reddington (2) and Sasabee (2) areas.

Bobcats: Of the ten bobcats submitted/tested, three (30%) tested positive in 2002. Rabid bobcats were reported in Cochise (1), Gila (1) and Graham (1) counties. A total of four people were attacked by rabid bobcats in 2002. The bobcats were infected with the Arizona gray fox rabies variant based on tests performed at the Texas State Health Laboratory.

Llamas: Three rabid llamas were reported in 2002, all in Yavapai County. All three llamas were pen-mates at a ranch in Camp Verde. The first llama had onset of symptoms (including aggressive behavior) on January 2, 2002 when it attacked its pen-mates. The llama died and was buried on the premises. The pen-mates developed symptoms approximately nine and 24 days later, respectively. All three were confirmed to be rabid through laboratory testing (the first llama was exhumed for testing). The llamas were infected with the gray fox variant. PEP was administered to seven people that were exposed to the rabid llamas.

Coyotes: Two of the 46 coyotes (4%) submitted in 2002 were rabies positive. Both were reported in Santa Cruz County; one each in Nogales and Tumacacori. Three dogs and one horse were attacked/exposed to the rabid coyote at Tumacacori. No humans were exposed. Both coyotes were infected with Arizona gray fox variant.

Dogs: Of the 977 dogs submitted for testing in 2002, one dog (0.1%)) from the Tucson area of Pima County tested positive for rabies. The dog (puppy), a three month old female Australian Shepherd mix, was first found wandering in the Safford area on March 11. It was brought to a humane shelter in Pima County where it was spayed and vaccinated, and then sent to an animal rescue foundation. Subsequently, the pup was displayed at a pet adoption fair in Tucson on March 22 and 24. The dog was euthanised after developing seizures soon thereafter, and the head was submitted to the ASHL where it tested positive for rabies. Officials from Pima County Health Department, the ADHS, and a local pet store issued press releases urging persons with potential saliva exposures to the pup to contact local health officials. A total of 105 persons received PEP as a precaution. The puppy was determined to be infected with Arizona gray fox rabies variant.

Javelina: One case of rabies in a javelina was reported in Arizona in 2002 in Gila County. The javelina was observed banging its head on a wall and biting latticework on the porch of a home in the Globe area. There were no human or pet exposures reported. This is only the second case of rabies reported in a javelina in Arizona. One similar case was reported in the Roosevelt Lake area of Gila County back in 1986. The javelina was infected with Arizona gray fox variant.

RABIES IN ARIZONA, 2002

County	Skunk	Bat	Fox	Coyote	Other	Total
Cochise	11	6	5		1 bobcat	23
Coconino		5	4			9
Gila			5		1 bobcat 1 javelina	7
Graham		2	1		1 bobcat	4
La Paz		1				1
Maricopa		10				10
Mohave		1				1
Pima	6	24	3		1 dog	34
Pinal		1	3			4
Santa Cruz	27		3	2		32
Yavapai		2	9		3 llamas	14
Yuma		4				4
TOTAL	44	56	33	2	8	143

HANTAVIRUS

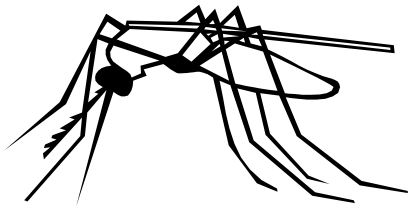
Three cases of hantavirus pulmonary syndrome (HPS) were reported in Arizona in 2002, all in male residents of Maricopa County. All three cases survived. One case in an adult male was most likely exposed to hantavirus in April while visiting relatives in Texas. He reportedly helped clean-up a house in a rural area. He developed flu-like symptoms, followed by respiratory distress, after returning to Arizona. He recovered after receiving supportive care at a local hospital. He tested positive for *Sin Nombre virus* (SNV) at the Arizona State Health Laboratory (ASHL). The patient's sister in Texas had also been hospitalized in May due to HPS, and another member of their family from the same household in Texas had recently died of an undiagnosed respiratory illness that was compatible with HPS.

The other two HPS cases in Maricopa County had onset of illness in December. One case was exposed to SNV infection at his mouse infested ranch house which was located in a rural area. The source of exposure for the other case could not be determined. To date, 37 cases of HPS have been reported in Arizona since this mouse-borne disease was first identified in 1993.

ARBOVIRUS SURVEILLANCE 2002

Arizona is one of only four states among the 48 contiguous states that has not yet documented West Nile virus (WNV) activity in state. The other WNV negative states include Nevada, Oregon and Utah. WNV was identified as the cause of meningitis in four Arizona residents with travel/exposure histories in other states; Indiana, Michigan, Illinois (or possibly Maryland) and Ohio, respectively. The four WNV meningitis cases resided in Maricopa (2) and Pima (2) counties. WNV infection was also confirmed in three horses with neurologic disease reported in southern Arizona, including one each in Cochise, Maricopa and Pima counties. All three horses had travel histories in other states prior to onset.

For the last three years, state and county health officials in Arizona have been working hard to enhance surveillance efforts to detect WNV activity. With the help of many agencies and individuals throughout the state, health officials have been successful in establishing surveillance coverage in all fifteen counties. During the 2002 surveillance effort, Arizona State Health Laboratory (ASHL) personnel tested 753 mosquito pools, over 1,500 sentinel chicken blood samples, and over 100 human specimens (sera and/or CSF). All were negative for WNV except for the aforementioned human cases. In addition, staff at the University of Arizona–Veterinary Diagnostic Laboratory had tested over 200 dead birds. All were negative for WNV.



Surveillance efforts did detect other arboviruses, however. Twenty-eight mosquito pools tested positive, including 14 for St. Louis encephalitis (SLE) virus (Yuma County-9, Maricopa County-2, Pima County-2, and Pinal County-1), and 14 for western equine encephalitis (WEE) virus (Yuma County-10, Pinal County 2, Maricopa County-1, and Mohave County-1). Thirty-one sentinel chickens seroconverted to arboviruses, including 16 to SLE (Yuma County-11, Maricopa County-4, and Pima County-1), and 15 to WEE (Yuma County-14 and Maricopa County-1). Finally, one horse with neurologic illness tested positive for WEE in Cochise County. County vector control personnel stepped-up mosquito control efforts in the affected areas.

Two human cases of St. Louis encephalitis were reported in Maricopa County. One had onset of encephalitis symptoms in August and the other in October. Neither patient had traveled outside the county prior to onset.

DENGUE

Two cases of dengue fever (one confirmed and one presumptive) were reported in 2002 in residents of Coconino County. Both patients had onset of symptoms (fever, headache, myalgias, arthralgias, rash) while vacationing in Thailand. Both patients reported getting mosquito bites on their feet while in Thailand.

PLAGUE

Plague was identified as the cause of two prairie dog die-offs in northern Arizona this summer. One epizootic was reported in Coconino County in west Flagstaff, and the other was reported in Apache County at a historic site south of Ganado. Flea pools were collected and tested from both sites by researchers from Northern Arizona University (NAU). No human cases of plague were reported in Arizona in 2002.

ROCKY MOUNTAIN SPOTTED FEVER

One case of Rocky Mountain spotted fever (RMSF) was reported in a child in June in Navajo County. The child had onset of illness several days after a tick was removed from his neck. Symptoms included fever (105° F), headache, neck pain, and maculopapular rash which started on the extremities (including palms and soles) and spread to the trunk. A presumptive diagnosis of RMSF was made based on results from serologic tests. This is the first case of RMSF contracted in Arizona since 1994.

LEPTOSPIROSIS

One fatal case of leptospirosis was reported in September in a male resident of Maricopa County. The man had onset of symptoms in late August approximately two weeks after vacationing in Hawaii. Symptoms included high fever, headache, diarrhea, vomiting, stiff neck and syncope. The patient's condition deteriorated with development of ARDS (adult respiratory distress syndrome), DIC (disseminated intravascular coagulopathy), renal failure, and liver failure. He died ten days after

onset. The patient was most likely exposed to infection when swimming in natural pools on Oahu.

REPTILE-BORNE SALMONELLOSIS

The source of infection for a case of salmonellosis in a child in Maricopa County was definitively linked to a pet "bearded dragon" (Agamid lizard from Australia). *Salmonella* ser. Adelaide was isolated from a stool culture from a young girl who was hospitalized following five days of diarrhea, abdominal cramping and dehydration. The patient's older brother had recently acquired a bearded dragon at a local pet fair. In follow-up, cloacal cultures were taken from the brother's lizard, as well as from pet bearded dragons in two other households where the patient had some potential for exposure. The cloacal culture for the brother's lizard was also positive for Salmonella ser. Adelaide, implicating this lizard as the source of infection. Cloacal cultures from the bearded dragons in the other two households were also positive for Salmonella bacteria, but of different serotypes (*Salmonella* ser. Rubislaw and *Salmonella* subspecies IIIb – serotype not determined). Bearded dragons are becoming increasingly popular as pets across the country. Results from this recent case follow-up would suggest that bearded dragons (like many pet reptiles) are commonly colonized with *Salmonella* bacteria.

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